THE ROLE OF COGNITIVE, NONCOGNITIVE AND CAREER DEVELOPMENT FACTORS IN THE ACADEMIC SUCCESS AND PERSISTENCE OF TRADITIONAL AND FIRST-GENERATION COLLEGE STUDENTS

by

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ABSTRACT

First-Generation College (FGC) students are a growing demographic in postsecondary education. Approximately two million, or 39.3% of the five million students who have taken the ACT standardized test over the past two and a half years, have parents without a 4-year college degree. FGC students are more likely to arrive on campus with different needs than those of traditional college students. Recent data on college student outcomes suggest that FGC students are less engaged, are less likely to successfully integrate diverse college experiences, and are more likely to leave college prematurely than traditional students. This project will extend our understanding of FGC students by assessing the college outcomes of FGC students. Specifically, this study has two purposes: a) to assess if FGC and traditional students differ on levels of variables including noncognitive/motivational factors, career development variables, and ACT scores, as well as college outcome measures: end of first-year retention and first-to-second-year retention, and b) to determine if noncognitive/motivational, career development and standardized test score variables differentially predict college outcome for FGC and traditional student populations. Results show FGC students had slightly higher Social Activity and Social Connection SRI Scales than traditional students. Additionally, ACT combined with noncognitive SRI scores are the most potent predictors of first-year GPA and first-to-second-year retention for both traditional and FGC students. The combination of ACT and SRI accounted for nearly twice the amount of

incremental variance in predicting first year GPA for FGC than for traditional college students.

This thesis is dedicated to my parents, Barbara and Ben Phinney, who have given me the gift of confidence and education as a means to grow and define myself.

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CHAPTER I

INTRODUCTION

First-Generation College (FGC) students are a growing demographic in postsecondary education. Approximately two million, or 39.3% of the five million students who have taken the ACT standardized test over the past 2 1/2 years, have parents without a 4-year college degree (J. Sconing, personal communication, February 11, 2009). In 1995, 34% of freshmen entering the nation's 4-year institutions, and 54% of students beginning 2-year community colleges were the first members of their family to attend college (Choy, 2001). Although varying definitions exist, most commonly, a FGC student is an incoming student neither of whose parents has graduated from a noncognitive institution. FGC students differ from traditional students in a variety of precollegiate traits. FGC students are often from low socioeconomic statuses (SES), ethnic minority cultures, and rural populations (Bui, 2002; Terenzini, Springer, Yaeger, Pascarella, & Nora, 1996; Valadez, 1998). In addition, FGC students report having less parental support related to a college education, as well as less rigorous high school college preparation than traditional college students (Choy, 2001; Terenzini et al., 1996). Thus, FGC students are more likely to arrive on campus with different needs than those of traditional college students. Recent data on college student outcomes suggest that FGC

students are less engaged, are less likely to successfully integrate diverse college experiences, and are more likely to leave college prematurely than traditional students (Pike & Kuh, 2005; Terenzini et al., 1996).

This project will extend our understanding of FGC students by assessing the college outcomes of FGC students. Specifically, this study has two purposes: a) to assess if FGC and traditional students differ on levels of variables including noncognitive/motivational factors, career development variables, and ACT scores, as well as college outcome measures: end of first year retention and first to second year retention, and b) to determine if noncognitive/motivational, career development, and standardized test score variables differentially predict college outcome for FGC and traditional student populations.

Results from this study may assist institutions in developing more effective outreach programs. Traditional college interventions and programs focus on the student population as a whole, and may operate with the assumption that traditional and FGC students have similar academic and collegiate characteristics. Understanding the unique needs and experiences of FGC students will allow interventions to target the unique needs of and help FGC students in efforts to help them achieve in a competitive academic and work environment.

A college education has important benefits to individuals in society. A college education promotes personal development and career advancement (Terenzini et al., 1996), creating better citizens that are more likely to vote, assume civic leadership positions, use new technologies, and support advanced education for their children and communities (Pascarella & Terenzini, 1991).

This review of literature will serve to inform the reader of the differences in precollegiate traits and college outcome measures of FGC and traditional students. Such precollegiate traits include SES, role of parents in education, and high school preparation for college. College outcome measures cover topics of postsecondary persistence, performance, and experience. Additional variables relating to the success of college students included are a review of noncognitive/motivational and career development variables.

Socioeconomic Status

First generation status is associated with belonging to a lower SES (Bui, 2002; Fallon, 1997; Hertel, 2002; McCarron & Inkelas, 2006; Terenzini et al., 1996; Valadez, 1998). According to the National Educational Longitudinal Study (NELS:88), only 2.8% of FGC students were found in the highest SES quartile, compared with 21.4% of traditional students. A larger percent of FGC students comprised the lowest SES quartile (38.7%), compared with traditional students (27.6%) (McCarron & Inkelas, 2006).

Lower SES conditions are generally not supportive of educational attainment; of the FGC students in the lowest SES quartile, 76.6% attained less than a bachelor's degree (McCarron & Inkelas, 2006). Students growing up in lower SES environments receive fewer resources that promote educational attainment, such as attending less academically rigorous and non-college-oriented high schools, exposure to non-college-bound peer groups, and lack of financial capital (Billson & Terry, 1982; Trusty & Niles, 2004; Valadez, 1998). More specifically, low SES students' high school environment is associated with variables that decrease the odds of applying to college when controlling

for SES. Such variables include attending a school with a high percentage of minority students, getting help completing college financial aid forms, talking with parents about jobs after high school (as opposed to talking about college plans), and having peers who plan to work after high school (as opposed to attending college) (Valadez, 1998). Many teachers and guidance counselors are overworked, busy with disciplinary problems, and may easily overlook the needs of students. This school experience can result in children being "pigeonholed" into a particular track, which can not only be inaccurate, but may impact the self-concept or outlook of a particular student (Macy, 2001). Clearly, the environmental factors of lower SES are not conducive to applying to college.

In addition to environmental factors associated with growing up in a low SES, such as high school and peer environments, lack of financial capital and financial aid awareness is also related to educational attainment. Many lower income families are not aware of financial aid assistance, and view tuition as a barrier to a college education. Even though aid such as Pell Grants exists for lower SES students, many students are unaware of these resources because their parents did not know about them, or teachers have never informed them. A College Board Policy Report highlights the elements of successful FGC students who have benefited from grant aid, and among five other factors, lists the primary importance of early awareness of higher education and financial aid (Macy, 2001). Not only are low SES families unable to pay tuition with existing resources, but they may also fear paying off loans and losing a wage-earning family member (Fallon, 1997).

Role of Parents

Parents who lack experience with higher education may not promote or instill college aspirations in their children. Many studies show a high correlation between parent's education level and their student's aspirations and decisions concerning a college degree. In the book, *Going to College*, the authors found that parent education was related to college aspirations of 9th grade students. Eighty-six percent of children whose parents have a college degree or higher aspired towards college, compared with 75% whose parents have a high school diploma or some college experience, and 59% whose parents have some high school education (Hossler, Schmit, & Vesper, 1999). Parental education has an even stronger relationship with student educational attainment and the type of institution attended. For example, 75% of students whose parents went to college also attended college, compared with 50% and 21% of students whose parents had a high school diploma or less, respectively (Hossler et al. 1999). According to one study using the National Educational Longitudinal Study (NELS: 88) database, in which students were surveyed through high school and 2 years afterward, students whose parents did not go to college were twice as likely to enroll in a public 2-year institution than a 4-year institution compared with students whose parents had received a bachelor's degree (Choy, 2001).

Although the level of parent educational attainment is correlated with student's college aspirations, parent involvement in the child's life and the child's perceptions of their parent's attitudes and behaviors towards higher education may help explain how parents influence their children's education (Hossler et al., 1999; Wettersten et al., 2005). In a study looking at the educational and vocational attitudes of rural high school

students, the only independent variable to predict outcomes such as career outcome expectations, academic outcome expectations, career salience, and school engagement behaviors, was perceived parents' pro-educational behaviors (Wettersten et al., 2005). Hossler et al. break down the role of parental involvement into three components: parental influence, encouragement, and support. Each component plays a different role in the student's college process. This model was determined by surveying and interviewing a matched set of students and parents in a longitudinal study (Schmit & Hossler, 1995).

The first component described by Schmit and Hossler (1995) is the parental influence component, and describes covert and overt signals that parents inadvertently send to their children, based on their own experiences and beliefs. The first of five different signals, predisposition (1), refers to the child's awareness of his/her parents', siblings', and other relatives' educational level. The direction-setting signal (2) determines whether or not the student has grown up with the expectation that he/she will attend college from an early age. If the parents expect their child to go to college, they tend to be more aware of the necessary college preparation, thus affecting the type and rigor of high school curriculum chosen for the child. The price (3) signal determines how parents transmit attitudes about cost of education, including how much they are willing to spend and ultimately affecting type of postsecondary education selected. The proximity signal (4) sent by parents influences whether the student will study out of state or close to home, based on what their parents believe is best for the child. The last signal, quality (5) determines what expectations the parents and students have about the academic

reputation of the college. One example would be if a parent attended an Ivy League college, it is likely that the child has grown up with similar expectations.

The second component, parental encouragement, has three parts: attitude, consistency, and congruence. Parental attitude reflects parents desire for their children to do whatever makes them happy. Consistency refers to how consistently the parents encourage their students throughout the choice process. Congruence reflects the similarity between the child and parent's plans. The third component of parental involvement, parental support, is comprised of action-oriented activities such as visiting college campuses together, or parents' college fund savings.

Schmit and Hossler (1995) found that parental involvement was a critical aspect of students' decision-making process. For example, the influence component had the strongest relationship before high school when students were not thinking directly about college. Even though students were too young to consider college, they were more likely to go if they received subtle cues from their parents, thus shaping their own expectations. For students in a more active phase of the college decision-making process, such as deciding whether or not to go to college, the degree to which parents encouraged children was strongly related to attending college. During the later stages of the college decision-making process, when a student is more engaged, how much a parent showed support such as taking a child to visit a college was more important (Hossler et al., 1999). This model of parent involvement sheds light on the various ways that parents can influence their children's college decisions and outcomes. Because college is a new experience for parents of FGC students, parents may have negative and/or neutral influences on their children's attitudes towards college.

High School Preparation

FGC students are typically less academically prepared than traditional students (Bui, 2002; Riehl, 1994; Terenzini et al., 1996). FGC students have lower high school GPAs and lower ACT/SAT scores than their counterparts (Bui, 2002; Riehl, 1994). In the NELS:88 nationwide longitudinal study of students from 8th grade through noncognitive education, 34% of the FGC students who took a standardized test scored in the lowest quartile, as opposed to 17.7% of traditional students (Choy, 2001). Not only do FGC students score lower on standardized tests, but only 50% of FGC students even take the test, compared to 74.2% of traditional students. In addition to lower academic achievement standards, Terenzini et al. (1996) reported that FGC students from the National Study of Student Learning (NSSL), a 3-year longitudinal study, representing 4,000 new students entering colleges nationwide, entered with lower initial critical thinking skills as measured by Collegiate Assessment of Academic Proficiency (CAAP).

FGC students' lower academic scores are related in part to lower academic expectations (Horn & Nunez, 2000) and differences in course-taking behaviors during high school (Trusty & Niles, 2004). There is a strong link between intensive math course-taking as early as middle school and high school, and college enrollment and degree attainment (Adelman, 1999; Trusty & Niles, 2004). Students who took algebra in middle school are more likely to complete advanced high school math and continue to college. In the NELS:88 study, only 14% of first-generation students took high school level algebra in the 8th grade, compared to 34% of traditional students. First-generation students were still less likely to enroll in these math courses after controlling for high

math proficiency, suggesting that they held lower expectations or aspirations for their academic goals than students' whose parents had a college degree (Horn & Nunez, 2000). Similarly, only 63% of FGC students versus 83% of traditional students took advanced-level math in high school. First-generation students who took 8th grade algebra had a higher percentage (83%) of taking advanced level math (Horn & Nunez, 2000). Not surprisingly, parents of first-generation students were less likely (31%) to encourage their children to take algebra in 8th grade, while 53% parents who had a college degree encouraged their students to do so.

Postsecondary Persistence

Given the differences in background between FGC students and traditional students, it is clear that FGC students are disadvantaged in terms of financial and cultural capital, parental influence, and academic preparation when faced with beginning college. Data on college student outcomes further suggests differences between traditional and FGC students in noncognitive persistence, performance, and general college experience.

Noncognitive persistence refers to students who stay enrolled in college beyond the first year, a time when most struggling students drop out (Choy, 2001; Horn, 1998). First-generation status is highly correlated with college attrition and a less persistent college track (Choy, 2001; McCarron & Inkelas, 2006). FGC students are twice as likely to drop out of college, even after controlling for such factors as financial aid, attendance status, race/ethnicity, SES, and campus life satisfaction (Choy, 2001). Not only is first-generation status associated with attrition, but also this population is less likely than others to return to a 4-year institution once they have left (Horn, 1998). Although many

FGC students aspire to attain a bachelor's degree, according to the Beginning Postsecondary Study, 62.1% did not reach their original aspirations set in high school. Of those FGC students who aspired to a college education and did not succeed, 40.9% attempted higher education, and only 29.5% received their bachelor's degree 8 years after high school (McCarron & Inkelas, 2006). For FGC students who remain in college beyond the first and second years of college, many are less likely to remain on a persistent track after factors connected with low persistence rates have been controlled (Choy, 2001).

In addition to being a FGC student, first-generation status coupled with low SES is correlated with problematic persistence from first to second year (Lohfink & Paulsen, 2005). Students growing up in a low SES household have fewer resources for personal growth and learning due to mediocre or poor high schools and the influence of family and peers who may have little exposure to higher education; factors associated with student persistence (Lohfink & Paulsen, 2005; McCarron & Inkelas, 2006; Trusty & Niles, 2004). Trusty and Niles (2004) examined the relationship between SES and degree completion of students with early talent (students who demonstrated above average cognitive ability and had noncognitive educational goals), finding that for a 1-standard-deviation increase in SES, students were 64% more likely to complete a college degree.

The link between precollegiate achievement and postsecondary persistence is also strong (Metzner, 1989; Trusty & Niles, 2004). Students who drop out of college have lower precollege achievement scores and high school GPAs than students who persist (Metzner). FGC students tend to have lower high school GPAs and lower standardized test scores, placing them at a higher risk of leaving college early. Related to high school

achievement, students who complete more rigorous math credits in high school have a significantly higher chance of completing college (Trusty & Niles). In a study determining factors that influenced the college degree completion of high school students, Trusty and Niles found that intensive course taking in math and science had the strongest relationship with retention. In fact, students who completed an additional credit in intensive math increased their odds of realized potential by 73%. FGC students are less likely than their peers to have enrolled in intensive math courses, thus hurting their chances at finishing college (Horn & Nunez, 2000). Other high school variables besides achievement and math course taking are related to college persistence. Trusty and Niles reported that high school variables including class attendance, extracurricular activity involvement, and parent's expectations explained 22% of variance in degree completion.

Postsecondary Performance

FGC students typically perform more poorly in college compared to traditional college students. FGC students participating in the NSSL study not only took fewer courses, but also had lower grades throughout 3 years of college (Pascarella, Pierson, Wolniak, & Terenzini, 2004). Some of the variance on college academic performance can be accounted for by precollegiate performance and preparation. In fact, up to 25% of variance explaining first-year college GPA can be accounted for by a combination of standardized test scores and high school grades (ACT, 1997; Robbins et al., 2004).

Precollegiate performance, college performance, and college retention are related to one another; many strategies aimed at increasing student persistence and retention are academically focused programs (ACT, 2004). Such programs strive to increase a

student's academic competence in reading, writing, and mathematics, in order to increase the likelihood that he or she will stay in school. Students with higher first-year GPAs are less likely to drop out of college (Ishitani & DesJardins, 2002). Low GPAs and low academic integration index scores were significantly related to the early departure of FGC students attending 2-year institutions (Choy, 2001).

Postsecondary Experience

FGC students' lower levels of persistence and performance in college are just some of the variables that account for their overall noncognitive experience, and how it differs from traditional students. In general, FGC students are less holistically integrated in the college environment than traditional students. FGC spend more time off campus, either working more hours per week or living at home, are less involved with non-academic campus activities such as extracurricular programs, and have fewer social ties on campus with peers and faculty, than traditional students (Billson & Terry, 1982; Hahs-Vaughn, 2004; Hertel, 2002; Pascarella et al., 2004; Pike & Kuh, 2005).

FGC students largely tend to have a different attitude towards their academic course work than their traditional college student peers. Even though FGC students have significantly lower grades than their peers, many studies confirm that FGC students place more importance on their schoolwork and academic involvement than traditional students (Hertel, 2002; Lohfink & Paulsen, 2005; McCarron & Inkelas, 2006; Pike & Kuh, 2005). McCarron and Inkelas (2006) found in the nationwide Beginning Post Secondary (BPS) study that FCG students perceived that academic involvement was more important in attaining their educational aspirations, whereas traditional students perceived that

parental support was more important. Similarly, for students at a large Midwestern university, the value of intellectual activities and pursuits predicted overall college adjustment significantly better for FGC students than traditional students. Conversely, perceived support from friends predicted overall college adjustment significantly better for traditional students (Hertel, 2002). This finding supports the general trend that traditional students are more socially integrated and think of college as time for interpersonal growth rather than academic growth (Terenzini et al., 1994). Pike and Kuh (2005) reported that higher levels of academic engagement were positively related to minority group membership.

Although FGC students seem to place more importance on their academic achievement, there seems to be a missing link between their expectations and actual academic achievement and overall college experience. FGC students' desire to achieve as reflected in their educational orientation may be the result of their feeling uncomfortable and out of place in a new and challenging environment. Numerous studies document that FGC students perceive the college environment as socially novel and less supportive than their traditional peers do, and they feel academically underprepared (Bui, 2000; Pascarella et al., 2004; Pike & Kuh, 2005). In a study of students' college transitions, Terenzini et al. (1994) found FGC students typically experienced feelings of self-doubt and expressed the need to be validated by those in their environment, including family, faculty, peers, and staff members. Validation can empower, confirm, and support FGC students who might be new to higher education. This may enable them to not only feel accepted, and capable of college-level work, but also that they have valuable opinions and insights, and are worthy of attention and respect of faculty and peers.

Rendon (1994) further supports the need for faculty validation of FGC students' ideas and experiences. Often students coming from culturally diverse traditions and who have little understanding of higher education feel doubt, fear, and frustration as they enter the college environment. More specifically, they feel that the traditional college environment does not recognize the value of their past experiences, and that in order to be academically successful, they must assimilate and divorce their traditional culture. This collective viewpoint helps to explain FGC students' different conception of college from traditional students, one in which FGC students are placing pressure on themselves to reach a certain standard. Because they have no experience to draw on from their parents, coupled with lesser precollegiate academic preparation, their view of college is less about a social process and more about being under prepared in a highly challenging new environment.

FGC student engagement in academic activities is important for their success. In many cases, participation in academic activities is more beneficial for FGC students than for traditional students. Pascarella et al. (2004) found that academic and classroom activities have stronger positive effects for FGC students, especially after the second and third year. FGC students may benefit from more academic experiences, but they seem to lack in overall college engagement, which has large benefits for student learning and outcome (Pike & Kuh, 2005). Student engagement takes learning beyond the typical classroom setting. Students who are able to integrate diverse experiences and perceptions of college, including integrating information from courses and other learning activities into conversations with peers, faculty, and parents, have higher levels of cognitive growth. Such cognitive development is associated with living on campus, having higher

educational aspirations, interaction with faculty members, and non-course-related interactions with peers, all of which FGC students tend to engage less frequently (Lohfink & Paulsen, 2005; Pascarella et al., 2004; Pike & Kuh, 2005).

Working while attending college is another barrier to FGC student success. Although many college students work as part of their noncognitive experience, FGC students typically spend more time per week working, and working off-campus (Billson & Terry, 1982; Pascarella et al., 2004; Terenzini et al., 1996) In addition to working more hours per week than their traditional counterparts, Pascarella et al. (2004) found that FGC students negatively benefited from working during college; their additional responsibilities had a significant negative effect on their cognitive growth, including critical thinking, internal locus of attribution for academic success, and preference for higher order tasks. In contrast, traditional students experienced small, yet nonsignificant gains in cognitive growth from working. Working also serves as a barrier to college students' campus integration and engagement, factors that are related with retention (Billson & Terry, 1982; Tinto, 1993). The College Board Policy Report highlights many FGC students' experiences as they struggled through a noncognitive experience. One such student, Dave Reynolds, who became a McNair scholar and went on to achieve a Ph.D. in clinical psychology, made the following comment on the relationship between financial aid and his college experience: "Getting financial aid frees you up to make college a better opportunity, a better experience. For most of the people who have to work full-time on top of it, it's an almost unbearable experience" (Macy, 2000, p. 36).

Noncognitive/Motivational Factors

Existing literature suggests marked differences between FGC and traditional students in such precollegiate variables: SES, parent support and influence, high school experience, and academic preparation. Data also support generational status differences in noncognitive college experience including persistence, performance, and general college experience. The purpose of this study is to expand the database on FGC students, by elaborating on their strengths and weaknesses in terms of motivational or noncognitive factors, as well as career development variables. Both of these variables have strong relationships with college student success. Because FGC students come from differing backgrounds, it is important to assess their strengths and weaknesses in these new terms, in order to better predict and aid in their student success.

Noncognitive/motivational factors refer to psychosocial factors, rather than standardized tests or high school GPA. In a recent meta-analysis of the role noncognitive factors play in college persistence and performance, nine factors were found to be positively related to student outcomes: achievement motivation, academic goals, institutional commitment, perceived social support, social involvement, academic self-efficacy, contextual influences (institutional selectivity, financial support, and institutional size), and general self-concept about academic-related skills (Robbins et al., 2004). Specifically, the best predictors of retention were academic-related skills, academic self-efficacy, and academic goals. The best predictor for college performance (GPA) was academic self-efficacy. Surprisingly, these noncognitive factors were found to be better predictors of college outcome than past academic performance (high school

GPA and standardized test scores), as they accounted for more variance (Robbins et al., 2004).

Based on the findings of the meta-analysis of the relationship between noncognitive variables and college student success, ACT, Inc., who initially was involved with the study, created the Student Readiness Inventory (SRI) the following year. The SRI can be used institutionally to provide more information on the incoming classes' strengths, weaknesses, and needs that will assist in their college success. Specifically, the SRI can identify students who are at-risk for dropping-out and poor academic performance, by combining noncognitive results with standardized achievement scores. Additionally, institutions can use the SRI scores to aid in student development and intervention programs. The SRI score reports can be used to help students (a) understand the types of variables that predict academic success, (b) help them identify their personal strengths and weaknesses, and (c) create plans of action to improve necessary areas (Gore, 2006). The role of noncognitive/motivational factors is increasing in importance in the field of college student development as research points to factors other than achievement measures of GPA and ACT/SAT scores to predict performance and persistence.

Noncognitive/motivational factors are important ingredients in predicting college student success; however, they may play a larger role predicting student success of FGC students (Dennis, Phinney, & Chuateco, 2005; Nauman, Bandalos, & Gutkin, 2003). It has been theorized that FGC students may rely more on their personal motivation to achieve academically than traditional students, who have benefited from higher levels of college preparation and support. Nauman et al. (2003) found that expectancy for success

beliefs were the best significant predictor of GPA over ACT scores for FGC students, whereas ACT scores were the most significant predictor for traditional students, followed by expectancy for success and goal setting. In addition to college outcomes such as GPA, Dennis et al. (2005) explored noncognitive/motivational variables that predicted FGC student adjustment. The authors defined college adjustment as reasons why students persisted in college, such as determination and commitment to complete college. Career/personal motivation predicted college adjustment for FGC students when controlling for SES, high school GPA, and social support.

For FGC students, having personal motivation means working towards a goal even when the odds are against them. The following excerpt is from the College Board Policy Report, "From Rusty Wires to Wrought-Iron Gates," describing the story of Gene Alan Dooley, one of nine kids who grew up in a poor area of Roanoke, VA where he received no awareness or support from his parents or teachers:

> He wanted so badly to do well in college that he used to make up quizzes for himself. He'd read his quizzes into a cassette tape, and then listen and respond to the tapes during his 4 a.m. newspaper delivery routes in the car: The Sun would be coming up over nearby Tinker Mountain, and there Alan would be driving along and talking to himself about the pertinent themes of *The Great Gatsby* or the molecular components of cells. (Macy, 2000, pp. 20-21)

For many FGC, their motivation for learning and achieving in college is the result of their desire for a better life than the one they were born into. When asked about their transitions to college, a common theme from FGC students in a study by Terenzini et al., (2004) was that of leaving an old way of life behind to seek better job opportunities, and to rise above a life of economic despair and stagnant hope. In some cases, these students resisted the pull from uninformed friends and family members, and others were

encouraged by their parents to seek a more challenging life path. As highlighted in the College Board Policy report, some students were born with the simple desire to learn more about life, in contrast to their family members who were using all of their energy to survive (Macy, 2001). In either case, these students have rich and powerful experiences driving their educational experiences forward.

Another source of FGC students' motivation is their perceived need to work harder than traditional students, as they believe they are academically disadvantaged. As mentioned at length in the college experience section above, FGC students weight their academic pursuits as more important to attaining a college degree than their traditional peers (Hertel, 2002; Terenzini et al., 1994). Although FGC students feel disadvantaged, they demonstrate extra motivation to succeed and work hard. Another related source of academic motivation that FGC students have been shown to possess is their confidence in college major. Another large study by Terenzini et al. (1996) shows that even though FGC students arrive on campus with lower initial critical thinking levels, they are significantly more confident in their choice of major than traditional students. Tracy and Robbins (2005) have found that interest-major congruence predicts college GPA throughout all 4 years of college, and for students with low interest levels, interest-major congruence predicts college persistence.

One purpose of this study is to determine if FGC and traditional students have differing levels of noncognitive/motivational levels, and if these variables differentially predict college outcomes such as end of first-year GPA and first-second-year persistence. The knowledge gained about the role that noncognitive/motivational factors play can aid in possible solutions for FGC student success. Specifically, assessing FGC students'

noncognitive factors with instruments such as the SRI may provide a way to increase their academic performance by way of academic self-efficacy and other measures of motivation. Clearly, FGC students have demonstrated their motivation and desire to do well; however, they seem to fall short in successfully navigating the waters of a noncognitive education. The SRI is able to point out strengths and weaknesses, enabling FGC students to understand how they can transform their motivation into more effective pursuits. For example, academic self-efficacy is an important predictor of college success and is related to past academic experience (Brown et al., 2008; Lent, Brown & Larkin, 1986; Robbins et al., 2004). Because FGC students tend to experience less rigorous high school curricula, and have lower high school GPAs and standardized test scores, one would assume that they would also have lower academic self-efficacy beliefs. As mentioned above, FGC students reported that they felt less academically prepared and required more time to study than traditional college students did (Bui, 2002). Students with high self-efficacy achieve higher grades and have higher retention rates than students with low self-efficacy (Lent et al., 1986). A recent study by Brown et al. (2008) found that high school performance predicted college GPA indirectly by way of students' academic self-efficacy beliefs. The same study also found that standardized test scores were directly related with college performance. These findings have important implications for FGC students and academic self-efficacy assessment as a way to strengthen academic performance by targeting this noncognitive variable in student learning.

Career Development Variables

Career development and exploration is an important task for college students. College is a time for students to establish productive college careers that will prepare them for the world of work. Students are increasingly attending college with the purpose to find a better job, and many institutions play an active role to assist students along the path of career development (Astin, 1993). Noncognitive institutions facilitate career development in numerous ways, including providing career exploration courses and workshops, certification or awarding of degrees required by certain career fields, and career counseling centers that provide guidance and counseling to help students understand and solidify their career goals and plans (Astin, 1993; Chickering & Reisser, 1993). Students who have clarified their interests often have developed a sense of purpose, which informs their next step towards a career. Chickering and Reisser (1993) describe college as an essential time to clarify ones interests through various forms of learning from testing out new fields of knowledge, pursuing familiar topics in more depth, testing hunches about career possibilities, discovering new capabilities through experiential learning, leaving comfort zones, and participating in cocurricular opportunities. Acquiring new learning experiences through Higher Education also fosters a broad based development of talent that Chickering and Reisser (1993) argue is necessary in an increasingly global and interdependent world that is economically competitive. This study will assess differences between FGC students and traditional students in their career development, providing new opportunities to draw on and strengthen FGC students' outcome. Specifically, career development will be measured

by the following constructs: career maturity, career-decision-making difficulties, and career decidedness.

FGC students may differ in levels of career development from traditional college students, based on traditional career development theory and Social Cognitive Career Theory (SCCT). According to more traditional theories, career development is an evolving, life-long process in which individuals must accomplish a series of tasks appropriate for their developmental level, in order to progress successfully in vocational decision-making (McDaniels & Gysbers, 1992). As defined in numerous career development interventions, it is critical for students to be aware of and educated about the skills and attitudes needed to engage in the process of career development. From an elementary level, children must complete tasks such as understanding the self and others, understanding goals, making choices, and developing effective communication skills (Hoffman & McDaniels, 1991). Building upon this basic foundation, it is necessary for middle school students to learn about skills and attitudes to engage in career development, such as accessing career information and understanding gender role stereotyping. Also imperative is to obtain self-knowledge and skills to engage in vocational planning and success, such as acquiring decision-making skills and having a positive self-concept (O'Brien, Dukstein, Jackson, Tomlinson, & Kamatuka, 1999).

FGC students may be at risk for not developing these foundational skills, which can affect their career decisions in college. Many FGC students are unaware of the importance of early career planning and course-taking in relation with their career aspirations (Arbona, 2005). It is vital for FGC students, especially of racial or ethnic minority, to have a realistic view of career availability, as perceived career barriers and

cultural career myths can cause Mexican American college students to foreclose their career choices (Leal-Muniz & Constantine, 2005). Vocational and educational self-efficacy beliefs are also related to career outcome expectations (Ali, McWhirter, & Chronister, 2005), a trait that many FGC students lack.

In a career intervention aimed at at-risk youth, the Career Horizons Program was designed to provide experiences for middle school students to develop confidence and to widen their educational and vocational opportunities by setting the following goals: (a) enhance confidence in career planning and exploration of abilities, understanding of self, and potential for academic and vocational success in math and science; (b) increase the number of careers being considered by the students; (c) increase congruence between students' interests and their career choices; and (d) provide assistance in developing a positive support network (O'Brien et al., 1999). In addition to recognizing certain developmental tasks in a linear fashion, Social Cognitive Career Theory (SCCT) (Lent et al., 1994, 2000) provides a framework for how the environment and individual interact to explain career development. Primarily derived from Bandura's social cognitive theory, SCCT explains how social cognitive constructs of self-efficacy, outcome expectations, and career goals interplay with the environment to explain processes through which academic and career interests develop (Lent & Brown, 1996). Career self-efficacy refers to one's belief that he/she can perform a career-specific task. Individuals develop a sense of self-efficacy from (a) personal performance accomplishments, (b) social persuasion, (c) vicarious learning, and (d) felt senses or physiological and affective states (Bandura, 1977 as seen in Lent, 2005). Outcome expectations are the beliefs related to the outcome of a behavior, based on the learning experiences listed above. Goals are the result of both

self-efficacy and outcome expectations, for these perceptions help shape future goals of the individual. Given different environmental experiences including parental influence and socioeconomic status, FGC students are likely to have different academic and career experiences and expectations, which will affect their career path.

SCCT explains how the environmental factors shape career development across the lifespan (Lent, 2005). The learning experiences that one is exposed to help shape performance outcomes based on such features of the environment as educational quality, nature of available role models, parenting style, gender role socialization, peer supports, and community and family norms (Lent, 2005). In a study examining the impact of SES on school-to-work transitions of young adults in working-class occupations, those members of the higher SES cohort expressed marked differences in their career attitudes. High SES members reported greater interest in work as a source of personal satisfaction, higher levels of self-concept crystallization, greater access to external resources, and greater levels of career adaptability (Blustein et al., 2002). Two of the key differences between the high and low SES cohorts, educational resources and instrumental help from parents, accounted for differences in opportunities for development of self-concept and career exploration. Low SES parents exhibited "altruistic desire" to help their children, yet the findings from this study suggest that it did not account for their lack of exposure to the world of work and educational level. Consequently, they were less able to provide their children with financial support or the instrumental assistance in assessing opportunities (Blustein et al., 2002).

Research on parent role in career development shows the importance of parents as shapers of their children's career path. In a study by Turner and Lapan (2002) examining

the combined effects of career self-efficacy, career planning/exploration self-efficacy, and perceptions of parent support of middle school adolescents' career interests, perceived parent support accounted for one third to one half of their children's career-task related confidence. These results suggest the importance of early parent involvement in their children's development.

Statement of Study and Research Goals

As evidenced by the summarized literature on FGC students, this growing population of students is at-risk for not completing a postsecondary education as a result of differing background variables and disparate college experience and outcomes. Despite being placed in at-risk status, some research also reveals strengths and potential for FGC students to succeed in college based on their noncognitive and motivational drives. The purpose of this study is to seek ways to better understand this population in order to aid institutional administration and student affairs officials in program implementation and awareness. This study will add to existing FGC student data by assessing if group differences exist between FGC and traditional students in college outcome data, specifically first-year GPA and first-to-second-year persistence and in noncognitive/motivational and career development variables. Additionally, this study will determine if those college outcomes are differentially predicted by either of the following variables: achievement test, noncognitive/motivation, and career development variables.

CHAPTER II

METHODOLOGY

Sample

Participants were first-year college students enrolled in a fall semester 3-credit hour first-year experience (FYE) course at a large public Midwestern university over the course of 3 years, 2004-2006. The total sample over 3 years consisted of 738 students; 398 were male and 340 were female. Of the total sample, only 392 students identified themselves by their generational status, 171 responded as being FGC, and 221 as being traditional college students. Overall, the sample consisted of 76.4% students identifying as Caucasian, 16.2% as African American, 2 % as Asian/Pacific Islander, 1.9% Mexican American, 1.2% Latina/o, 1.2 % Multiracial, and .3 as Native American. Within the group of FGC students, 79.69% identified themselves as Caucasian, 14.28 as African American, 3% as Asian/Pacific Islander, .75% as Mexican American and Native American, and 1.5% as Other. This sample was chosen out of convenience and all data were archival in nature.

Design

All of the data contained in the study are archival institutional data and have already been collected from participants via previous survey instruments. Hence, participants will not undergo any additional activities for this study.

Measures

ACT College Entrance Exam. Developed by ACT Inc. (http://www.act.org/education/index.html), and first administered in 1959, The ACT is a national college admission and placement exam. The ACT test assesses high school students' general educational development, as well as their ability to complete general college-level work. The test consists of multiple-choice questions covering four skill areas: English, math, reading, and science. The ACT composite score consists of the arithmetic average of the 4 skill areas tested, and is reported on a scale of 1-36.

Student Readiness Inventory. The SRI (SRI, ACT, 2004) measures psychosocial factors and academic-related skills in order to predict the college outcomes, academic performance, and student retention (Le, Casillas, Robbins, & Langley, 2005). The instrument has 108 items, consisting of 10 scales each measuring psychosocial and study skill factors: Academic Discipline, General Determination, Goal Striving, Commitment to College, Study Skills, Communication Skills, Social Connection, Social Activity, Academic Self-Confidence, and Emotional Control. For a list of some sample items, please refer to Table 1. The items are based on a 6-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree." The SRI was created in response to an extensive meta-analysis of 109 studies, examining psychosocial and study skill factors

and their predictive relationship with college student performance and retention (Robbins et al., 2004). The SRI yields high internal consistency of the scales with Chronbach's alpha coefficients ranging from .80 to .87 (Le et al., 2005). The construct validity is evidenced by the four strongest scales correlating with high school GPA: Academic Discipline, r=.28; Commitment to College, r= .21; Social Connection, r= .20; Academic Self-Confidence, r= .32 (Le et al., 2005).

Career Maturity Inventory- Attitude Scale (CMI-A; Crites & Savickas, 1995). The CMI-A is a 25-item scale that measures career maturity in terms of vocational choice attitudes. Respondents mark either "agree" or "disagree" to each of the items. The CMI-A is part of the CMI-R, a version revised in 1995 from its previous versions in 1978, in order to reduce its length and to be used in postsecondary populations (Crites & Savickas, 1996). The CMI-A items are the same as those from the original version, which have well-established reliability and validity. Specifically, evidence in support of the construct validity of the CMI shows that while high school students in urban populations score higher on the CMI attitude scale than students from rural populations, both groups of high school seniors scored higher (p<.05) on the attitude scale than juniors (Crites & Savickas, 1995), supporting the maturity construct.

Career Decision-Making Difficulties Questionnaire (CDDQ; Gati, Krausz & Osipow, 1996). The CDDQ was constructed based upon the "ideal decision maker," a model describing one who is a) aware of the need to make a decision, b) willing to make the decision, and c) capable to make an appropriate, informed decision. Career difficulty is classified as any deviation from this model, which may lead to decision prevention or a less optimal decision. Decision-making difficulty is further classified in three major

categories: 1) Lack of readiness refers to having lack of motivation, indecision, and adherence to dysfunctional myths. 2) Lack of information refers broadly to the decision-making process, including little self-awareness, occupational knowledge, and obtaining additional information. 3) Inconsistent information includes using unreliable information, and dealing with internal and external conflicts (Gati, Krausz, & Osipow, 1996).

The questionnaire is made of 10 scales, each measuring 10 theoretical categories of difficulties listed above, and consists of 34 items. Respondents rate each item on a 9-point Likert scale ranging from "Does Not Describe Me," to "Describes Me Well." The first question is not part of the 10 scales, and asks the question, "Have you considered what field of study you would like to choose?" After choosing "Yes" or "No," respondents are asked to rate their degree of confidence in their answer based on a 9-point Likert item (1=not confident at all, to 9=very confident). The CDDQ reports internal consistency as measured by alpha to be .77 for the American sample of university students tested (Gati et al., 1996). Support of the construct validity of the CDDQ is evidenced by strong relationships between the CDDQ and two other measures of career readiness and difficulties, the Career Thoughts Inventory (CTI), and the Occupational Alternatives Question (OAQ) (Kleiman & Gati, 2004). The correlation between the total scores of the CDDQ and CTI was $r = .82$. In regards to the self-report measure of the OAQ, a planned contrast analysis comparison testing the hypothesis that participants with high scores on the CDDQ (lower levels of difficulties) had a first choice alternative, showed a significant difference between total CDDQ $t\ (198) = 3.25, p < .01$, and the overall severity of difficulties, $t\ (198) = 3.70, p < .001$ (Kleiman & Gati, 2004).

Career Questionnaire I (CQI). The CQI is currently an unpublished instrument that measures career decision satisfaction, career motivation, and progress towards career decision. Of the 23 items comprised of both open-ended and a 5-point Likert scale ranging from "Not at all Satisfied" to "Very Satisfied," there are 4 subscales. The first subscale measures satisfaction with college major choice (2 items); the second, decision-making progress (7 items); the third, respondent motivation (3 items); and the last subscale measures satisfaction with career choice (3 items). Although this test is currently unpublished, the researcher who originally administered the CQI to a FYE course the previous year reported the internal consistency between the subscales: satisfaction with major choice (.91), decision-making progress (.75), respondent motivation (.14), and satisfaction with career choice (.85).

College outcome measures. College outcome will be measured by two variables: college GPA and first-to-second-year retention. Specifically, college GPA was obtained from the sample student's GPA at the end of their first year of college, as reported from the institution. First-second-year retention was also obtained from the institution.

Generational status. Generational status is defined by whether both parents have graduated from a postsecondary institution or not. In the present study, generational status will be determined from two sources: the ACT and the SRI. For all 3 years included, the ACT includes an item asking whether or not students' parents have graduated from high school or college. The 2004 version of the SRI also has an item asking about parent educational status as well. Students whose parents have not graduated from college make up the FGC student sample.

Procedure

Students enrolled in the FYE course were required to complete all instruments during the first 2 weeks of class.

Data Analysis

This purpose of this study is to assess if group differences exist between FGC and traditional students among college outcomes, and other variables such as noncognitive/motivational and career development. Additionally, this study sought to determine if those college outcomes are differentially predicted by the following variables: achievement test, noncognitive/motivation, and career development variables.

Group comparisons between FGC and traditional students were assessed with ANOVAs or MANOVAs for continuous variables, and chi square analyses for categorical variables. Multiple and logistic regression analysis were used to assess relations between variables of interest and first-year GPA and retention status, respectively. Fisher's Z test, Hotelling's t, and Steiger's Z tests were used to compare whether the structure of predictive models differed between FGC and traditional students.

Table 1

Relevant Sample Items

Measure	**Definition**	**Sample Item**
SRI		
Academic Discipline	The amount of effort a student puts into schoolwork and the degree to which a student is hardworking and conscientious	I consistently do my school work well
Academic Self-Confidence	The belief in one's ability to perform well in school.	I achieve little for the amount of time I spend studying
Commitment to College	One's commitment to staying in college and getting a degree	A college education will help me achieve my goals.
Social Activity	One's comfort in meeting and interacting with other people.	I avoid activities that require meeting new people
Social Connection	One's feelings of connection and involvement with the college community.	I feel part of this college.

CHAPTER III

RESULTS

Descriptive Information

Descriptive statistics for the sample can be found in Tables 2 – 5. Sample demographics can be found in Table 2, and demographics by generational status can be found in Table 3. Sample means and standard deviations for each group can be found in Table 5. Not all students in each cohort were administered each of the instruments in the study. Table 4 provides a matrix describing which instruments are available in each cohort.

Research Questions

To test whether group differences existed between FGC and traditional students for each outcome measure, a series of ANOVAs were conducted and the findings are presented in Table 5. FGC and traditional students differed significantly on only two of the study variables. FGC students had slightly higher Social Activity SRI Scale scores with a mean of 57.70 (28.36), F (1, 332) = 4.387, $p < .05$ than traditional students' mean of 51.06 (29.36), F (1, 332) = 4.387, $p < .05$. Additionally, FGC students' Social Connection SRI Scale scores were higher, with a mean of 56.91 (26.92), F (1, 332) = 4.08, $p < .05$ than their traditional student peers with a mean of 50.87 (27.57), F (1, 332)

= 4.08, $p < .05$. Chi-square analyses were conducted to determine whether the college retention rates of FGC and traditional students differed. Results from these analyses can be found in Table 6. There was no significant relationship between first-to-second-year retention and generational status χ^2 (1, N = 352) = .715, p =.398. However, a significant relationship was observed between generational status and second to third-year retention χ^2 (1, N = 253) = 6.673, $p < .01$. These analyses reveal that FGC students were retained at a higher rate than their traditional counterparts (Table 6).

The second research question, whether college outcomes (first-year GPA and first-to-second-year retention) are differentially related to the following variables: achievement test (ACT), noncognitive/motivation factors (SRI), and career development variables (CMI, CQI and CMI), consisted of two sets of analyses: hierarchical linear regression analyses were performed to predict first-year GPA, and logistic regression analyses were performed to predict first-to-second-year retention.

To predict first-year GPA, a series of hierarchical linear regression analyses were conducted with first-year GPA as the dependent variable and ACT, SRI, and various combinations of Career Development measures as the predictor variables. Correlations between the variables can be found in Tables 7-8. In all cases, ACT was entered in the first step of the regression analysis followed in sequence by SRI and other career development measures. Tables 9-11 represent results of these analyses. For each analysis, values for R, total R^2, change in R^2, and standardized betas for the final regression model are presented. Analyses were conducted with the combined sample of FGC and traditional students as well as separately for each subsample. In the combined sample (Table 9), ACT accounted for approximately 4% of the variance in first-year spring GPA

(R^2 = .044, F (1,372) = 17.24, p < .001). SRI scores accounted for an additional 23% of the variance in GPA (R^2 = .272, $F\Delta$ (10,362) = 11.29, p < .001). In addition to ACT scores, the SRI scales measuring Academic Discipline and Academic Self-Confidence were significant predictors. Inspection of the standardized beta weights for these variables suggests that Academic Discipline is more than twice as potent in predicting first-year GPA compared to the ACT composite score. In contrast, Academic Self-Confidence was negatively related to GPA and slightly less potent in predicting GPA compared to ACT composite score.

The results for traditional students only (Table 10), revealed similar results with ACT alone accounting for approximately 6% of the variance in GPA (R^2 = .064, F (1,122) = 8.35, p < .001) and the combination of the ACT and SRI scores accounting for nearly 30% of the variance, or 24% incremental variance in GPA (R^2 = .292, $F\Delta$ (10, 112) = 3.59, p < .001). Inspection of the standardized beta weights in this model again suggest that Academic discipline is more than twice as potent a predictor of GPA compared to ACT scores. In this analysis, Academic Self-Confidence was not a significant predictor but was negatively related as observed in the combined sample regression.

Regression analyses were then conducted on the sample of FGC students alone (Table 11). As with previous analyses, ACT alone accounted for approximately 5.5% of the variance in first-year GPA (R^2 = .056, $F\Delta$ (1, 93) = 5.52, p < .05). SRI scales in the FGC sample accounted for an additional 41% of incremental variance in GPA (R^2 = .470, $F\Delta$ (10, 83) = 6.49, p < .001). Thus, for FGC students, SRI scores appear to account for approximately twice the incremental variance in first-year GPA compared to traditional

students. Inspection of the standardized beta weights suggests a pattern of findings consistent with those previously observed. Specifically, ACT composite scores and Academic Discipline both contribute significantly to the equation and Academic Discipline is more than twice as potent a predictor of GPA compared to ACT. In the FGC sample, Academic Self-Confidence was also a significant predictor and negatively related to GPA.

Although the regression models predicting GPA from ACT and SRI explain differing amounts of variance for each group, the models for both traditional and FGC students cannot be directly compared. Hence, two additional steps were taken to test whether models for each group are equivalent. The first step was to run a Fisher's Z test to compare the regression models across groups (Azen & Budescu, 2003). Specifically, the Fisher's Z test compared the fit of the models for both traditional and FGC students by comparing the R values of .540 and .686. The Z score = 1.699 was not significant. This analysis, however, takes into account only the overall level of variance accounted for and not the unique weighted contributions of the predictor variables. Thus, the second step compared the relative contributions of weighted predictor variables produced by the two samples using Hotellings t. This was done by applying the two weighted prediction models to the larger of the two samples (traditional students). Each prediction model was used to create a predicted GPA score in the traditional student sample and then these two predicted GPA values were correlated with each other and the actual student GPA values. If the two prediction models are similar, the actual correlation between predicted GPA (using both prediction models) and actual GPA should be similar. These two correlations

will differ to the extent that the two models have different structures. The difference between the two correlations is compared using Hotellings t and Steiger's z conversion.

Results from these analyses are presented in Tables 12-14. The correlation between the traditional student model predicted scores and traditional students actual GPA was .539 whereas the correlation between the FGC students' model predicted scores and traditional students actual GPA was .454. Hotelling's t, for the comparison between these two correlations = 2.033 and Steiger's z = 1.99, $p = <.05$. Based on these findings, it can be concluded that there are structural differences between the two sample models.

Given that the models predicting first-year GPA from ACT and SRI differ structurally for traditional and FGC students, one main difference between the models is the predictor variable, Academic Self-Confidence. Academic Self-confidence does not significantly predict GPA for traditional students, $\beta = -.007$, t (209) = -1.661. However, for FGC students, negative scores of Academic Self-Confidence significantly predicted GPA, $\beta = -.016$, t (159) = -3.931.

To determine whether career variables played a predictive role in first-year Spring GPA, a series of hierarchical linear regressions were conducted with first-year GPA as the dependent variable and ACT, SRI, and various combinations of Career Development measures as the predictor variables. Correlations between variables can be found in Table 15 and results can be found in Tables 16-24. Because not all career measures were administered to all students, some sample sizes in these analyses were small. Analyses with 50 or fewer subjects were disregarded for low power. For each analysis, values for R, total R^2, change in R^2, and standardized betas for the final regression model are

presented. Analyses were conducted with the combined sample of FGC and traditional students as well as separately for each subsample.

In the combined sample, three analyses are presented. In the first, (Table 19), step 1 replicates analyses presented previously (see Tables 9-11), but includes only students who completed the career measures entered in step 2. The addition of CDDQ scores in step 2 resulted in no change in the amount of variance accounted for in first-year GPA and the CDDQ variable did not contribute significantly to the prediction model. Examination of step 2 in Tables 20 and 21 reveal a similar pattern when CMI and CQI scores are added to the basic regression formula (e.g., ACT+SRI). It should be noted, however, that the addition of CQI variables accounted for an additional 7% variance in first-year GPA scores ($R^2 = .071$, $F\Delta\ (17, 83) = 2.754$, $p < .005$).

The same analyses were conducted on traditional students (see Tables 22-23) and the pattern of results was similar to that seen in the combined sample. Individual career variable and scale scores did not contribute to the overall regression model. However, as seen in the combined sample, the addition of CQI to the prediction of first-year GPA accounted for a small but significant increase in variance accounted for ($\Delta R^2 = .034$, $F\Delta$ $(15,53) = 2.036$, $p < .05$) and no distinct CQI variables were significant.

Parallel analyses using FGC students was only possible using the CMI variable due to the lack of first-generation students completing the CQI (see Table 24). The CMI variable did not contribute to the overall regression equation.

To determine whether first-year retention is differentially related to the outcome variables of achievement test (ACT) and noncognitive/motivation factors (SRI), logistic regression analyses were performed to predict first-to-second-year retention. Results

from the hierarchical logistic regression of retention on ACT and SRI scores are presented in Tables 25-27. Analyses were conducted with the combined sample of FGC and traditional students as well as separately for each subsample.

For the combined sample of both FGC and traditional students, ACT was entered into the hierarchical logistic regression in step 1. ACT alone was not a significant predictor of second-year retention (χ^2 (1) = .343, p = .558). The odds ratio of .982 suggests that for every one-point unit increase in ACT scores, the odds of being retained to the second year were reduced by .018. SRI scores were entered into the second-year prediction equation in step 2. The resulting prediction model (χ^2 (11) = 40.902, p = .000) was significant. Inspection of the regression coefficients and odds ratios provides information on which model variables significantly contribute to the overall predication equation. Table 25 shows the regression coefficients and odds ratios for all variables in this model. Commitment to College and Academic Discipline were positively related to second-year retention. The odds ratio of 1.01 for Commitment to College suggests that for every one-point unit increase in ACT and SRI scores, the odds of being retained to the second year increased slightly by .01. The odds ratio of 1.02 for Academic Discipline suggests that for every one-point unit increase in ACT and SRI scores, the odds of being retained to the second year increased slightly by .02. In contrast, Academic Self-Confidence was negatively related to retention. The odds ratio of .986 for Academic Self-Confidence suggests that for every one-point unit increase in ACT and SRI scores, the odds of being retained to the second year decreased by .014.

To determine if ACT and SRI predicted first-to-second-year retention for traditional students, ACT was entered into the hierarchical logistic regression in step 1.

ACT alone was not a significant predictor of second-year retention (χ^2 (1) = .416, p = .519). The odds ratio of 1.04 suggests that for every one-point unit increase in ACT scores, the odds of being retained to the second year increased only slightly by .04. SRI scores were entered into the second-year prediction equation in step 2. The resulting prediction model (χ^2 (10) = 33.573, p = .000) was significant. Inspection of the regression coefficients and odds ratios provides information on which model variables significantly contribute to the overall predication equation. Table 26 shows the regression coefficients and odds ratios for all variables in this model. Academic Discipline and Social Connection were positively related to second-year retention. The odds ratio of 1.03 for Academic Discipline suggests that for every one-point unit increase in ACT and SRI scores, the odds of being retained to the second-year increased slightly by .03. The odds ratio of 1.04 for Social Connection suggests that for every one-point unit increase in ACT and SRI scores, the odds of being retained to the second year increased slightly by .04. In contrast, Academic Self-Confidence was negatively related to retention. The odds ratio of .973 for Academic Self-Confidence suggests that for every one-point unit increase in ACT and SRI scores, the odds of being retained to the second year decreased slightly by .027.

To determine if ACT and SRI predicted first-to-second-year retention for FGC students, ACT was entered into the hierarchical logistic regression in step 1. ACT was entered into the hierarchical logistic regression in step 1. ACT alone was not a significant predictor of second year retention (χ^2 (1) = .715, p = .398). The odds ratio of .947 suggests that for every one-unit increase in ACT scores, the odds of being retained to the second year decreased by .053. SRI scores were entered into the second-year prediction

equation in step 2. The resulting prediction model (χ^2 (11) = 19.845, p = .048) was significant. Inspection of the regression coefficients and odds ratios provides information on which model variables significantly contribute to the overall predication equation. Table 27 shows the regression coefficients and odds ratios for all variables in this model. Academic Discipline is the only significant independent variable that contributes to the overall prediction. The odds ratio of 1.04 suggests that for every one-point unit increase in ACT and SRI scores, the odds of being retained to the second year increased by .04.

Table 2

Sample Demographic Information

Variable	Frequency	%
Gender		
Male	398	53.9
Female	340	46.1
Total	738	100.0
Generational Status		
FGC	171	43.6
TRAD	221	56.4
Total	392	100.0
Ethnicity		
African Am.	96	16.2
Asian/Pac.	12	2.0
White	452	76.4
Latino/Latina	7	1.2
Mexican Am.	11	1.9
Native Am.	2	.3
Multiracial	7	1.2
Other	5	.8
Total	592	100.0
Year		
2004	278	38.12
2005	207	28.08
2006	249	33.78
Total	734	100.00

Table 2 continued

Variable	Frequency	%
HS GPA		
.00	4	.6
3.50-4.00	173	25.3
3.00-3.49	223	32.7
2.50-2.99	170	24.9
2.00-2.49	92	13.5
1.50-1.99	20	2.9
Less than 1.49	1	.1
Total	683	100.0
1-2 Yr Retention		
Attrition	197	29.2
Retention	478	70.8
Total	675	100.0
2-3 Yr Retention		
Attrition	283	64.1
Retention	160	35.9
Total	449	100.0
Probation Status		
No Probation	428	71.6
On Probation	170	28.4
Total	601	100.0

Table 3

Demographics by Generational Status

Variable	FGC	%	TRAD	%	Total
Year					
2004	57	48	60	51	117
2005	56	40	83	59	139
2006	39	39	60	60	99
Total	171		221		392
Gender					
Male	56	38	90	61	146
Female	54	41	75	58	129
Total	110		165		
Ethnicity					
African Am.	19	14.28	45	24.32	64
Asian/Pac.	4	3.00	2	1.08	6
White	106	79.69	126	68.10	232
Latino/Latina	1	00.75	2	00.62	3
Mexican Am.	1	00.75	7	3.78	8
Native Am.	0	0	1	0.31	1
Multiracial	0	0	1	0.31	1
Other	2	1.50	1	0.31	3
Total	133		185		318
HS GPA					
.00	1	.60	0	0	1
3.50-4.00	49	29.50	66	30.50	115
3.00-3.49	43	25.90	78	36.10	121
2.50-2.99	45	27.10	46	21.29	91
2.00-2.49	25	15.06	20	9.25	45
1.50-1.99	3	1.80	5	2.31	8
Less than 1.49	0	0	1	0.46	1
Total	166		216		385

Table 3 continued

Variable	FGC	%	TRAD	%	Total
1-2 Yr Retention					
Attrition	46	30.46	53	26.36	99
Retention	105	69.53	148	73.63	253
Total	151		201		352
2-3 Yr Retention					
Attrition	69	61.60	108	76.59	177
Retention	43	38.39	33	30.49	76
Total	112		141		253
Probation Status					
No Probation	96	71.64	138	75.40	234
On Probation	38	28.35	45	24.59	83
Total	134		183		317

Table 4

Scales Available by Cohort Year

Variable	2004	2005	2006
ACT	X	X	X
SRI	X	X	X
HS GPA	X	X	X
1-2 Yr Retention	X	X	X
2-3 Yr Retention	X	X	
Yr 1 GPA	X	X	X
Yr 2 GPA	X	X	
CDDQ		X	
CMI		X	X
CQI	X	X	X

Table 5

Descriptive Statistics for Study Variables by Generational Status

HS GPA	*N*	X	*SD*	*F*	Sig.
FGC	169	2.31	1.11	1.415	.235
TRAD	216	2.18	1.06		
Total	385	2.23	1.08		
ACT	*N*	X	*SD*	*F*	Sig.
FGC	131	22.32	3.04	.713	.399
TRAD	155	21.98	3.54		
Total	286	22.13	3.32		
SRI	*N*	X	*SD*	*F*	Sig.
Comm to Coll					
FGC	155	53.74	30.03	.002	.969
TRAD	179	53.60	31.78		
Total	334	53.67	30.94		
Goal Striving					
FGC	150	42.04	29.28	.022	.882
TRAD	179	41.55	29.85		
Total	329	41.77	29.55		
Ac Disc					
FGC	155	50.60	28.37	.574	.449
TRAD	179	48.15	30.38		
Total	334	49.28	29.44		

Table 5 continued

SRI	*N*	X	*SD*	*F*	Sig.
Gen Determ					
FGC	155	48.28	29.87	.155	.694
TRAD	179	47.02	28.57		
Total	334	47.60	29.14		
Study Skills					
FGC	151	44.54	30.35	.309	.579
TRAD	179	42.72	28.91		
Total	330	43.55	29.55		
Comm Skills					
FGC	155	52.59	29.56	1.413	.235
TRAD	179	48.83	28.19		
Total	334	50.57	28.85		
Soc Activity					
FGC	155	57.70	28.36	4.387	**.037**
TRAD	179	51.06	29.36		
Total	334	54.14	29.05		
Soc Connection					
FGC	155	56.91	26.92	4.080	**.044**
TRAD	179	50.87	27.57		
Total	334	53.67	27.40		
Ac Self-Con					
FGC	150	50.84	27.61	1.531	.217
TRAD	179	47.01	28.32		
Total	329	48.75	28.02		

Table 5 continued

Emo Control					
FGC	155	51.94	28.34	.141	.707
TRAD	179	50.78	27.70		
Total	334	51.32	27.96		
CDDQ					
Scale	*N*	X	*SD*	*F*	Sig.
Mean Total CDDQ					
FGC	50	4.04	1.21	.846	.359
TRAD	70	3.82	1.29		
Total	120	3.91	1.26		
CMI-A					
Scale	*N*	X	*SD*	*F*	Sig.
Total Mean CMI-A					
FGC	169	6.30	7.04	1.85	.174
TRAD	217	7.29	7.20		
Total	386	6.86	7.14		
CQI					
Scale	*N*	X	*SD*	*F*	Sig.
Major Satis					
FGC	81	7.76	2.34	.732	.393
TRAD	107	8.02	1.86		
Total	188	7.91	2.08		

Table 5 continued

Car Dec Progress					
FGC	135	6.44	2.73	1.136	.287
TRAD	185	6.77	2.79		
Total	320	6.63	2.76		
Client Motivation					
FGC	135	10.18	2.19	1.199	.274
TRAD	185	10.45	2.14		
Total	320	10.34	2.16		
Car Explor Freq					
FGC	114	2.92	1.86	.054	.816
TRAD	161	2.97	1.92		
Total	275	2.95	1.89		
Car Choice Satis					
FGC	98	10.69	4.64	.017	.896
TRAD	153	10.61	4.72		
Total	251	10.64	4.68		
Help Seek Reasons					
FGC	82	2.85	1.24	.523	.470
TRAD	136	2.98	1.33		
Total	218	2.93	1.30		
Yr 1 GPA					
	N	X	*SD*	*F*	Sig.
FGC	137	2.57	.973	.103	.748
TRAD	183	2.61	.941		
Total	320	2.60	.949		

Table 5 continued

Yr 2 GPA

	N	X	*SD*	*F*	Sig.
FGC	74	2.88	.527	.544	.462
TRAD	91	2.81	.630		
Total	165	2.84	.586		

Table 6

College Retention by Generational Status

1-2 Yr Retention

Status	FGC ($N = 151$)	TRAD ($N = 201$)	χ^2
Attrition	46	53	
Retention	105	148	
			.715

2-3 Yr Retention

Status	FGC ($N = 112$)	TRAD ($N = 141$)	χ^2
Attrition	69	108	
Retention	43	33	
			.010*

* $p < .01$

Table 7

Intercorrelations Between First-Year Spring GPA, ACT, and SRI Scales for both Traditional and FGC Students

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1.ACT												
2.Yr 1 GPA	.21**											
3.Com to Coll	-.05	.17**										
4.Goal Striving	-.18**	.11*	.59**									
5.Ac Disc	-.06	.38**	.59**	.71**								
6.Gen Determ	-.16**	.18**	.57**	.80**	.76**							
7.Study Skills	-.10*	.12**	.41**	.65**	.60**	.66**						
8.Comm Skills	-.11*	.10*	.44**	.57**	.48**	.64**	.57**					
9.Soc Activity	-.15**	-.05	.31**	.40**	.19*	.25**	.22**	.30**				
10.Soc Connection	-.10*	-.01	.38**	.52**	.34**	.39**	.41**	.57**	.59**			
11.Ac Self-Con	.32**	.09*	.43**	.52**	.47**	.41**	.36**	.25**	.31**	.28*		
12.Emo Control	.00	.04	.34**	.42**	.38**	.36**	.32**	.38**	.30**	.26**	.39**	

** $p < .01$; * $p < .05$

Table 8

Intercorrelations Between First-Year Spring GPA, ACT, and SRI Scales for TRAD (bottom) and FGC Students (top)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1.ACT	1	.24*	-.03	-.07	.09	-.02	-.12	-.02	-.22*	-.18*	.27**	.06
2.Yr 1 GPA	.25**	1	.09	.06	.34**	.12	.07	.03	-.14	-.12	**-.09**	-.07
3.Com to Coll	-.03	.14	1	.61**	.64**	.62**	.47**	.43**	.41**	.42**	.49**	.42**
4.Goal Striving	-.11	.17*	.62**	1	.73**	.80**	.65**	.58**	.42**	.58**	.56**	.42**
5.Ac Disc	.06	.41**	.56**	.68**	1	.76**	.56**	.50**	.20**	.36**	.53**	.47**
6.Gen Determ	-.02	.19*	.54**	.81**	.47**	1	.66**	.66**	.31**	.51**	.50**	.36**
7.Study Skills	.05	.06	.37**	.61**	.60**	.60**	1	.52**	.22**	.44**	.40**	.30**
8.Comm Skills	-.06	.15	.49**	.60**	.58**	.69**	.57**	1	.30**	.55**	.27**	.36**
9.Soc Activity	-.28**	.03	.33**	.42**	.18*	.26**	.20**	.38**	1	.57**	.35**	.39**
10.Soc Connection	-.03	.16	.45**	.45**	.33**	.32**	.35**	.59**	.58**	1	.30**	.29**
11.Ac Self-Con	.28**	.19*	.50**	.60**	.56**	.52**	.46**	.34**	.19**	.19*	1	.45**
12.Emo Control	-.00	.08	.39**	.43**	.39**	.41**	.32**	.46**	.22**	.24**	.39**	1

Note. Intercorrelations for Traditional student participants are presented below the diagonal, and intercorrelations for FGC student participants are presented above the diagonal. ** $p < .01$; * $p < .05$

Table 9

Multiple Linear Regression Predicting Yr 1 GPA for both TRAD and FGC Combined

Model	*R*	R^2	ΔR^2	*β*	*Std. Error*	*Std. β*	*t*
1) ACT	.210	.044	.044	.055	.013		4.15*
2)	.521	.272	.227				
ACT				.083	.014	.318	5.86*
Com to Coll				-.002	.022	-.071	-1.214
Goal Striving				-.003	.003	-.081	-.853
Ac Disc				.020	.002	.647	8.713*
Gen Determ				.000	.003	-.007	-.082
Study Skills				-.002	.002	-.050	-.797
Comm Skills				.000	.002	.008	.117
Soc Activity				.001	.002	.043	.717
Soc Connection				-.001	.002	-.025	-.385
Ac Self-Con				-.008	.002	-.240	-3.726*
Emo Control				-.001	.002	-.026	-.505

* $p < .001$

Table 10

Multiple Linear Regression Predicting Yr 1 GPA for TRAD

Model	*R*	R^2	ΔR^2	*β*	*Std. Error*	*Std. β*	*t*
1) ACT	.254	.064	.064	.066	.023		2.89**
2)	.540	.292	.227				
ACT				.076	.024	.292	3.15**
Com to Coll				-.004	.003	-.136	-1.258
Goal Striving				.002	.006	.071	.367
Ac Disc				.020	.004	.679	5.287*
Gen Determ				-.002	.005	-.061	-.361
Study Skills				-.006	.004	-.177	-1.590
Comm Skills				-.003	.005	-.086	-.637
Soc Activity				.001	.003	.032	.295
Soc Connection				.004	.004	.115	.964
Ac Self-Con				-.007	.004	-.201	-1.661
Emo Control				-.001	.003	-.038	-.404

* $p < .001$; ** $p < .005$

Table 11

Multiple Linear Regression Predicting Yr 1 GPA for FGC

Model	*R*	R^2	ΔR^2	*β*	*Std. Error*	*Std. β*	*t*
1) ACT	.254	.056	.056	.075	.032		2.349
2)	.686	.470	.414				
ACT				.095	.031	.301	3.069**
Com to Coll				-.006	.004	-.172	-1.485
Goal Striving				-.001	.005	-.031	-.195
Ac Disc				.025	.005	.753	5.110*
Gen Determ				.005	.005	.162	1.042
Study Skills				.001	.003	.018	-.165
Comm Skills				-.002	.004	-.057	-.486
Soc Activity				.000	.004	-.004	-.036
Soc Connection				-.003	.005	-.087	-.707
Ac Self-Con				-.016	.004	-.455	3.931*
Emo Control				-.005	.004	-.140	-1.359

* $p < .001$; ** $p < .005$

Table 12

Fisher's Z Test Comparing the R^2 Values of Models Predicting Yr 1 GPA for TRAD and FGC Combined

Model	R^2	*n*	*z*
1.TRAD	.540	123	
2.FGC	.686	94	
			1.699

Table 13

Intercorrelations Between Yr 1 GPA, TRAD Student Predictive Model, and FGC Student Predictive Model

	1.	2.	3.
1.Yr 1 Spring GPA		.539**	.454**
2.TRAD Student Predictive Model			.851**
3.FGC Student Predictive Model			

Table 14

Hotellings t / Steiger's Z Test Comparing Direct R and Crossed R Values of Models Predicting Yr 1 GPA for FGC and TRAD

	T	*z*	*n*
	2.033	1.99	124

Table 15

Intercorrelations Between First Year Spring GPA, CMI, CDDQ Total Mean, CQI Scales

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1.CMI	1								
2.CDDQ	.60**	1							
3.CQI_Major Satis	.03	-.50**	1						
4.CQI_Car Dec. Progress	.06	-.63**	.68**	1					
5.CQI_Motivation	-.03	-.04	.16**	.18**	1				
6.CQI_Help-Seek Reasons	-.06	-.57**	.27**	.55**	.06	1			
7.CQI_Freq Car Explor	-.05	-.04	.09	.14**	.17**	.12*	1		
8.CQI_Satis Car Choice	-.30**	-.64**	.40**	.61**	.21**	.50**	.19**	1	
9. Yr 1 Spring GPA	-.03	-.04	.05	.06	-.04	.08	-.01		

Table 16

Multiple Linear Regression Predicting 1st-Year Spring GPA from CDDQ and CMI for both TRAD and FGC Students

Model	*R*	R^2	ΔR^2	*β*	*Std. Error*	*Std. β*	*t*
1) CMI	.113	.013	.013	-.050	.040	-.129	-1.228
CDDQ				.028	.085	.034	.326

* $p < .001$

Table 17

Multiple Linear Regression for Predicting 1st-Year Spring GPA from CMI and CQI for both TRAD and FGC

Model	*R*	R^2	ΔR^2	*β*	*Std. Error*	*Std. β*	*t*
1) CMI	.228	.052	.052	.019	.012	.1261	.559
CQI_Major Sat				-.019	.054	-.038	-.354
CQI_Car Dec Making				.033	.049	.079	.668
CQI_Client Motiv				-.067	.040	-.135	-1.7
CQI_Reas Help-seek				.084	.070	.101	1.205
CQI_Car Expl Freq				-.003	.034	-.008	-.096
CQI_Car Choice Sat				-.009	.019	-.043	-.462

* $p < .001$; ** $p < .005$

Table 18

Multiple Linear Regression for Predicting 1st-Year Spring GPA from CMI and CQI for both TRAD and FGC

Model	*R*	R^2	ΔR^2	*β*	*Std. Error*	*Std. β*	*t*
1) CMI	.168	.028	.028	.007	.007	.061	.924
CQI_Major Sat				.004	.039	.008	.094
CQI_Car Dec Making				.031	.038	.075	.824
CQI_Client Motiv				-.070	.032	-.141	2.223
CQI_Car Choice Sat				-.005	.017	-.021	-.270

*$p < .001$; ** $p < .005$

Table 19

Multiple Linear Regression for Predicting 1st-Year Spring GPA from CDDQ, ACT and SRI for both TRAD and FGC

Model	*R*	R^2	ΔR^2	*β*	*Std. Error*	*Std. β*	*t*
1) ACT	.572	.328	.328	.072	.031	.268	2.342
Com to Coll				-.003	.004	-.090	-.745
Goal Striving				-.009	.008	-.248	-1.188
Ac Disc				.018	.006	.551	3.06**
Gen Determ				.009	.007	.247	1.323
Study Skills				-.004	.005	-.120	-.817
Comm Skills				-.001	.006	-.029	-1.89
Soc Activity				.005	.004	.144	1.141
Soc Connection				.001	.005	.026	.184
Ac Self-Con				-.005	.006	-.121	-.786
Emo Control				-.003	.004	-.077	-.688
2) ACT	.572	.328	.000	.072	.031	.268	2.326
Com to Coll				-.003	.004	-.087	-.681
Goal Striving				-.009	.008	-.248	-1.176
Ac Disc				.018	.006	.551	3.042**
Gen Determ				.009	.007	.247	1.311
Study Skills				-.004	.005	-.121	-.811
Comm Skills				-.001	.006	-.031	-.196
Soc Activity				.005	.005	.146	1.119
Soc Connection				.001	.005	.026	.181
Ac Self-Con				-.004	.006	-.119	-.763
Emo Control				-.003	.004	-.075	-.662
CDDQ				.006	.091	.008	.062

* $p < .001$; ** $p < .005$

Table 20

Multiple Linear Regression for Predicting 1st-Year Spring GPA from CMI, ACT and SRI for both TRAD and FGC

Model	*R*	R^2	ΔR^2	*β*	*Std. Error*	*Std. β*	*t*
1) ACT	.518	.269	.269	.083	.014	.319	5.847*
Com to Coll				-.002	.002	-.075	-1.278
Goal Striving				-.002	.003	-.075	-.789
Ac Disc				.020	.002	.646	8.569*
Gen Determ				.000	.003	-.010	-.112
Study Skills				-.001	.002	-.047	-.738
Comm Skills				.000	.002	.008	.112
Soc Activity				.001	.002	.042	.683
Soc Connection				-.001	.002	-.024	-.365
Ac Self-Con				-.008	.002	-.243	-3.74*
Emo Control				-.001	.002	-.029	-.554
2) ACT	.518	.269	.000	.083	.014	.318	5.747*
Com to Coll				-.002	.002	-.076	-1.281
Goal Striving				-.002	.003	-.077	-.798
Ac Disc				.020	.002	.647	8.546*
Gen Determ				.000	.003	-.010	-.115
Study Skills				-.001	.002	.046	-.726
Comm Skills				.000	.002	.008	.124
Soc Activity				.001	.002	.042	.689
Soc Connection				-.001	.002	-.024	-.363
Ac Self-Con				-.008	.002	-.242	-3.72*
Emo Control				-.001	.002	-.028	-.542
CMI				.001	.006	.006	.132

* $p < .001$; ** $p < .005$

Table 21

Multiple Linear Regression Predicting 1st-Year Spring GPA from CQI, ACT and SRI for both TRAD and FGC

Model	*R*	R^2	ΔR^2	*β*	*Std. Error*	*Std. β*	*t*
1) ACT	.586	.344	.344	.111	.026	.480	4.213*
Com to Coll				.001	.004	.042	.321
Goal Striving				-.010	.006	-.286	-1.573
Ac Disc				.013	.005	.412	2.612
Gen Determ				.004	.006	.118	.617
Study Skills				.000	.004	-.001	-.091
Comm Skills				.001	.004	.041	.312
Soc Activity				.009	.004	.311	2.220
Soc Connection				-.007	.005	-.228	-1.545
Ac Self-Con				-.006	.005	-.184	-1.319
Emo Control				-.001	.004	.020	.199
2) ACT	.644	.415	.071	.100	.027	.431	3.645*
Com to Coll				.000	.004	-.012	-.083
Goal Striving				-.012	.006	-.363	-1.940
Ac Disc				.014	.005	.429	2.722
Gen Determ				.008	.007	.255	1.272
Study Skills				-.001	.004	-.042	-.344
Comm Skills				.000	.005	.011	.075
Soc Activity				.008	.004	.279	1.988
Soc Connection				-.004	.005	-.130	-.818
Ac Self-Con				-.007	.005	-.205	-1.453
Emo Control				-9.18E-06	.004	-.003	-.027
CQI_Major Sat				-.054	.070	-.120	-.769
CQI_Car Dec Making				.075	.063	.193	1.193
CQI_Client Motiv				-.099	.048	-.236	-2.049
CQI_Reas Help-seek				.001	.074	.001	.009
CQI_Car Expl Freq				.052	.047	.117	1.095
CQI_Car Choice Sat				.016	.021	.088	.770

* $p < .001$; ** $p < .005$

Table 22

Multiple Linear Regression Predicting 1st-Year Spring GPA from CMI, ACT and SRI TRAD

Model	*R*	R^2	ΔR^2	*β*	*Std. Error*	*Std. β*	*t*
1) ACT	.541	.292		.077	.024	.294	3.15**
Com to Coll				-.004	.003	-.141	-1.268
Goal Striving				.002	.006	.074	.378
Ac Disc				.021	.004	.683	5.27*
Gen Determ				-.002	.005	-.068	-.398
Study Skills				-.006	.004	-.179	-1.598
Comm Skills				-.003	.005	-.078	-.563
Soc Activity				.001	.003	.037	.344
Soc Connection				.004	.004	.108	.891
Ac Self-Con				-.007	.004	-.199	-1.638
Emo Control				-.001	.003	-.040	-.414
2) ACT	.541	.292		.077	.025	.293	3.09**
Com to Coll				-.004	.003	-.141	-1.282
Goal Striving				.002	.006	.069	.339
Ac Disc				.021	.004	.684	5.18*
Gen Determ				-.002	.006	-.066	-.386
Study Skills				-.006	.004	-.178	-1.571
Comm Skills				-.003	.005	-.079	-.565
Soc Activity				.001	.004	.039	.349
Soc Connection				.004	.004	.108	.883
Ac Self-Con				-.007	.004	-.199	-1.628
Emo Control				-.001	.003	-.038	-.385
CMI				.001	.012	.006	.069

* $p < .001$; ** $p < .005$

Table 23

Multiple Linear Regression Predicting 1st-Year Spring GPA from CQI, ACT and SRI for TRAD

Model	*R*	R^2	ΔR^2	*β*	*Std. Error*	*Std. β*	*t*
1) ACT	.642	.412		.080	.028	.388	2.88
Com to Coll				-.003	.004	-.141	-.816
Goal Striving				.005	.007	.193	.685
Ac Disc				.009	.005	.345	1.86
Gen Determ				.001	.007	.044	.166
Study Skills				-.013	.004	-.477	-2.98**
Comm Skills				-.005	.005	-.184	-.940
Soc Activity				-.004	.004	-.176	-1.04
Soc Connection				.008	.005	-.065	-.342
Ac Self-Con				-.002	.005	.307	1.63
Emo Control				-.003	.004	-.091	-.670
2) ACT	.668	.446		.073	.031	.351	2.373
Com to Coll				-.006	.005	-.266	-1.31
Goal Striving				.003	.008	.116	.391
Ac Disc				.011	.006	.394	1.94
Gen Determ				.003	.00	.098	3.42
Study Skills				-.013	.005	-.473	2.74
Comm Skills				-.005	.006	-.202	-.924
Soc Activity				-.005	.004	-.200	-1.13
Soc Connection				.012	.006	.446	2.01
Ac Self-Con				-.002	.005	-.084	-.426
Emo Control				-.004	.005	-.114	-.795
CQI_Major Sat				-.071	.074	-.192	-.956
CQI_Car Dec Making				.093	.073	.266	1.27
CQI_Client Motiv				.031	.064	.079	.492
CQI_Reas Help-seek				.009	.028	.050	.324
CQI_Car Expl Freq				.031	.064	.079	.492
CQI_Car Choice Sat				.009	.028	.050	.324

* $p < .001$; ** $p < .005$

Table 24

Multiple Linear Regression Predicting 1st-Year Spring GPA from ACT, SRI and CMI for FGC

Model	*R*	R^2	ΔR^2	*β*	*Std. Error*	*Std. β*	*t*
1) ACT	.679	.462	.462	.092	.031	.291	2.91**
Com to Coll				-.006	.004	-.175	-1.49
Goal Striving				.000	.005	-.014	-.087
Ac Disc				.024	.005	.738	4.84*
Gen Determ				.006	.005	.177	1.12
Study Skills				.000	.003	.014	.130
Comm Skills				-.002	.004	-.050	-.418
Soc Activity				.000	.004	-.013	-.112
Soc Connection				-.004	.005	-.099	-.788
Ac Self-Con				-.015	.004	-.453	3,86*
Emo Control				-.005	.004	-.142	-1.36
2) ACT	.680	.463	.001	.094	.032	.300	2.92**
Com to Coll				-.006	.004	-.174	-1.47
Goal Striving				-.001	.006	-.022	-.132
Ac Disc				.024	.005	.739	4.82*
Gen Determ				.006	.005	.178	1.12
Study Skills				.000	.003	.012	.111
Comm Skills				-.002	.004	-.058	-.481
Soc Activity				.000	.004	-.014	-.119
Soc Connection				-.004	.005	-.098	-.779
Ac Self-Con				-.015	.004	-.455	-3.85*
Emo Control				-.005	.004	-.141	-1.34
CMI				-.005	.013	-.038	-.418

* $p < .001$; ** $p < .005$

Table 25

Logistic Regression Analysis of First-to-Second-Year Persistence on ACT and SRI Scales for *TRAD and FGC* Combined

First-to-Second-Year Retention

Predictor Variable	B	Wald	df	Sig.	Odds Ratio
ACT	.030	.599	1	.439	1.03
Com to Coll	.010	4.33	1	.037	1.01
Goal Striving	-.008	.985	1	.321	.992
Ac Disc	.024	13.6	1	.000	1.02
Gen Determ	-.005	.472	1	.492	.995
Study Skills	.002	.108	1	.742	1.00
Comm Skills	.004	.437	1	.508	1.00
Soc Activity	.004	.522	1	.470	1.00
So Connection	.005	.580	1	.446	1.00
Ac Self-Con	-.014	5.39	1	.020	.986
Emo Control	.000	.042	1	.838	.999

Table 26

Logistic Regression Analysis of First-to-Second-Year Persistence on ACT and SRI for TRAD

Predictor Variable	B	Wald	df	Sig.	Odds Ratio
ACT	.103	1.75	1	.186	1.12
Com to Coll	.011	1.08	1	.298	1.01
Goal Striving	.00	.071	1	.789	1.01
Ac Disc	.025	3.80	1	.051	1.03
Gen Determ	-.002	.015	1	.904	.998
Study Skills	-.012	.956	1	.328	.988
Comm Skills	.003	.059	1	.808	1.00
Soc Activity	-.001	.018	1	.894	.999
Soc Connection	.034	6.77	1	.009	1.04
Ac Self-Con	-.027	3.88	1	.049	.973
Emo Control	-.015	1.80	1	.179	.985

Table 27

Logistic Regression Analysis of First-to-Second-Year Persistence on ACT and SRI for FGC Students

Predictor Variable	B	Wald	df	Sig.	Odds Ratio
ACT	-.022	.069	1	.793	.979
Com to Coll	.000	.002	1	.961	.999
Goal Striving	-.015	.771	1	.380	.986
Ac Disc	.045	9.01	1	.003	1.04
Gen Determ	-.014	.849	1	.357	.986
Study Skills	.005	.223	1	.636	1.01
Comm Skills	.010	.801	1	.371	1.01
Soc Activity	.009	.698	1	.403	1.01
Soc Connection	.001	.002	1	.966	1.00
Ac Self-Con	-.022	3.14	1	.077	.979
Emo Control	.004	.001	1	.981	.954

CHAPTER IV

DISCUSSION

The present study was conducted to determine the relative contributions of cognitive, noncognitive, and career-related variables to the academic success and persistence of FGC and traditional students. Specifically, the purposes of this study are: a) to assess if FGC students differ from traditional students on levels of variables such as noncognitive factors (SRI scores), career development variables, and ACT scores, as well as the college outcomes measures of first-year GPA and first-to-second-year retention, and b) to determine if SRI scores, career development, and ACT scores differentially predict college outcomes for FGC and traditional student populations. Results from this study will aid institutions in constructing and implementing effective outreach programs that may draw on student strengths, and acknowledge and bolster relative weaknesses.

Results from the present study suggest that ACT combined with noncognitive SRI scores are the most potent predictors of first-year GPA and first-to-second-year retention for both traditional and FGC students. Among students in their first year of college, ACT routinely accounts for a small but significant amount of variance in predicting first-year spring GPA. Noncognitive variables as measured by the SRI account for a considerable incremental variance above and beyond ACT scores. For the combination of traditional and FGC students, the Academic Discipline SRI scale accounts for the majority of the

additional variance. Not surprisingly, Academic Discipline measures students' conscientiousness and dedication towards their schoolwork.

The pattern of findings in models predicting first-year GPA were remarkably similar between traditional and FGC students; however, additional analyses suggest the structure of the prediction models between the two samples differed. Two possibilities exist for this difference. First, the relationship between Academic Discipline and GPA is notably stronger among FGC than traditional students, suggesting that Academic Discipline may play a more salient role in predicting first-year GPA for FGC than traditional students. Second, the role of SRI scale Academic Self-Confidence is notably different between the two populations. While Academic Self-Confidence is not a significant predictor of GPA among traditional students, it was significantly related to GPA among FGC students. Specifically, higher levels of Academic Self-confidence are strongly and negatively related to GPA.

The overall results from the logistic regression analyses suggest that the combination of ACT and SRI scores significantly predict first-to-second-year retention for both FGC and traditional students. For both samples, ACT scores alone did not significantly predict first-to-second-year retention; however, when combined with SRI scores, both models significantly predicted retention. For the combined sample, Academic Discipline accounted for the greatest amount of variance for predicting retention. Academic Discipline was the only significant predictor for FGC students. However, for traditional students, Academic Discipline and Social Connection were positively related to retention whereas Academic self-confidence was negatively related to this academic outcome.

These findings are consistent with previous studies. Traditional predictors of college outcome measures such as standardized test scores are routinely the strongest predictors of college GPA. In two separate studies exploring various relationships between noncognitive variables and college outcome measures, Robbins et al. (2004, 2006) consistently found ACT and high school GPA to be the strongest predictors of first-year GPA. In addition to the strong relationships of traditional predictors, noncognitive variables were incrementally predictive of first-year GPA above and beyond ACT scores and high school GPA (Robbins et al., 2004). In a follow-up study, Robbins et al. (2006) determined that the SRI scale score Academic Discipline was the strongest predictor of GPA.

It should be noted that the departure patterns for students at the institution used in the study may look different from the typical 4-year institution. To determine a possible reason for the large numbers of students who left the university after the second year, post hoc analyses revealed that 80% of the attriting students were in good academic standing. Anecdotally, this suggests that the university in the present study may be used as a stepping-stone for a university of higher caliber.

Similar to the results from the present study, Robbins et al. (2004) observed incremental contributions of the noncognitive constructs in predicting retention above and beyond the prediction of ACT/SAT scores were significant. Also consistent with the present study, the relationship between ACT test scores and retention was relatively low. Noncognitive variables representing academic goals, social support, social involvement, and academic self-efficacy had beta-weights comparable to those of more traditional variables, suggesting their potential for equal status as predictors of retention (Robbins et

al., 2004). In a follow up study, with the incremental validity models as the primary analysis, ACT scores were among the top predictors of first-year retention, along with Commitment to College, Academic Discipline, and to a lesser extent, Social Connection (Robbins et al., 2006). Similarly, the logistic regression for traditional students included strong relationships with Academic Discipline, and Social Connection.

Clearly, the SRI can be used to enhance the accuracy of predicting college outcomes above and beyond traditional variables. Not only does the addition of SRI scales enhance prediction of GPA in traditional students, but they appear to be even more potent predictors in FGC students. This finding suggests that differences may exist between traditional and FGC students in their first year of college. Specifically, noncognitive factors may play a more salient role in the academic success and persistence of FGC students relative to their traditional student peers. Existing research on FGC students supports this finding by suggesting that noncognitive/motivational factors may play a larger role in predicting student success of FGC students (Dennis et al., 2005; Nauman et al., 2003). Specifically, Nauman et al. (2003) found expectancy for success beliefs better predicted GPA for FGC students, compared with ACT scores for traditional students. Given that FGC students are typically under-academically-prepared for college (Bui, 2002; Riehl, 1994; Terenzini et al., 1996), FGC students means of succeeding in college are likely to be rooted in sheer determination and motivation for a different life from that of their parents (Macy, 2000; Olive, 2008).

The two differentiating features of the predictive models between FGC and traditional students are the role of the Academic Discipline and Academic Self-confidence SRI scales. The relationship between Academic Discipline and GPA is

stronger for FGC than for traditional students. Although current research on FGC students does not address the role of Academic Discipline as operationalized in the present study, there is evidence suggesting that FGC students place more weight on academic endeavors than their peers. Specifically, McCarron and Inkelas (2006) reported that FGC students perceive schoolwork involvement as more important in attaining aspirations, whereas traditional students view parental support as more important. In a study determining factors predicting college adjustment, intellectual pursuits better predicted college adjustment for FGC students, and social relationships for traditional students (Hertel, 2002). Lastly, Pike and Kuh (2005) found a relationship between higher levels of academic engagement and minority status to be a likely indicator of FGC students. Although more research examining the relationship between Academic Discipline and college outcomes for FGC students is merited, the trend that FGC students place more emphasis on academic involvement than traditional students seems consistent (Hertel, 2002; Majer, 2009; McCarron & Inkelas, 2006).

Given that FGC students are generally less academically prepared than traditional students, the increase in academic involvement may explain FGC students' perceptions that they must focus more on schoolwork to meet the academic expectations of a postsecondary degree. In a practical setting, it might be beneficial to measure noncognitive variables among incoming students – especially those from first-generation backgrounds. For example, available Academic Discipline scores could provide administrators and practitioners with important information about the perceived skill and or motivation level of incoming students. With such information, interventions could be developed to target FGC students scoring low on AD, inviting or requiring them to enroll

in college success courses that explain necessary academic skills and the relevance of a college degree for personal and career development.

FGC and traditional student prediction models also appear to differ with respect to the role of Academic Self-Confidence. Academic Self-Confidence significantly and negatively predicts GPA for FGC students. In other words, FGC students with higher levels of Academic Self-confidence had lower GPAs at the end of their first year. Academic Self-Confidence was also negatively related to GPA for traditional students, but was not significant. Existing research on Academic Self-Confidence has not focused on generational status possibly explaining the different findings than in the present study. Specifically, higher levels of academic self-efficacy positively predicted GPA and retention for college students (Lent et al., 1986). More recent findings show that high school performance predicts college GPA indirectly via academic self-efficacy (Brown et al., 2008). A study by Gore (2006) sheds more light on the relationship between the measure of Academic self-confidence and college outcomes. Specifically, the predictive validity of Academic Self-Confidence depends on the time of measurement. Students' Academic self-confidence measures were less predictive of GPA when measured at the beginning of the school year than when measured after the first semester. That students tend to have less academic experience to build an accurate level of academic self-efficacy at the outset of college fits nicely with Bandura's Social Cognitive Theory (Gore, 2006).

Although very little research has been conducted on FGC students and academic self-confidence, SCT theory may explain why these students have a negative relationship with GPA. FGC students tend to have less academic experience on which to base their levels of academic self-confidence. FGC student literature suggests that these students

have greater feelings of self-doubt and a need for validation and support by peers and faculty as a result of having less experience with higher education (Rendon, 1994; Terenzini et al., 1994). Hence, these students are likely to have lower academic self-confidence levels, which could be indicative of working hard to make up for the lack of confidence, which may result in higher GPAs. According to one of two studies on FGC students and Academic Self-efficacy, traditional students had higher levels of academic self-efficacy than FGC students at the start and end of the first year of college. The self-efficacy measure used in this study was more specific to discrete academic tasks than the SRI, which may account for why FGC students had lower levels than traditional students, differing from the present study. Results from this study also suggest that irrespective of confidence in ability to succeed, FGC students still underperform when compared with traditional students (Ramos-Sanchez & Nichols, 2007). In another recent study on FGC students in a community college setting, Self-efficacy for education and first-generation immigrant status predicted increased GPA after 1 year (Majer, 2009). While this study shows a different trend than the previous, it must be noted that a community college setting is likely to have more FGC students, perhaps creating a less threatening or novel environment for FGC students.

From the combined results of these studies, it is clear that Academic Self-confidence is a sensitive measure than may be dependent on many environmental factors that can affect the experience and confidence of students. It is suggested that more research be done on FGC students and academic self-confidence to further understand the dynamics of this changing relationship. Ideas for future research could look at academic self-confidence and high school GPA to determine if perceived beliefs are accurate or

skewed. Alternatively, a mixed methods study could look at not only measured levels of academic self-confidence before and after the first semester of college, but could also ask qualitative questions about direct experience and perceived academic beliefs. A possible intervention could be to screen for FGC students with high Academic Self-confidence who may be at risk for lower GPAs.

Although one of the primary research questions of this study relates to role of career development variables in student outcome, none were observed. There were no significant group differences in career development variables observed between traditional and FGC students. Neither the CMI nor the CDDQ predicted first-year GPA for each sample including the combined, traditional, and FGC students. The CQI was predictive of a slight increase in variance for the combined and traditional samples. There were not enough participants to run the analysis for the FGC student sample. Results from the present study are inconsistent with the literature on FGC students and career development variables, which suggests that FGC students are at risk for failing to develop foundational skills such as awareness of early career planning, course-taking relation with career aspirations (Arbona, 2005), and perceived career barriers (Leal-Muniz & Constantine, 2005). Although no significant group differences were found between the groups, the regression analyses may be inconclusive due to low numbers, especially of FGC students. Future directions for research could look closely at the relationship between generational status and the specific career development variables used in the present study.

Although this study increases our understanding of FGC student population and our need for interventions, the following limitations exist. The small number of students

limited the usefulness of the data, especially as there were inconsistencies among variables across the 3 years. The definition of a FGC student in this study, of neither parent obtaining a 4-year bachelor's degree, differs from the definition used in the literature, which defines a FGC as being the first in the family to attend college. Although the varying definitions account for considerable overlap, if a parent has attended some college without graduating, this experience with higher education may account for differences in the FGC student's precollegiate environment as discussed in the literature review. The results from the current study show structural differences in predictive models between FGC and traditional student populations; however, the small number of significant group differences among outcome variables and precollegiate variables such as ACT and HS GPA may account for closer similarities between groups than differences. For most of the career development variable regression equations, there were less than 50 students and results were discarded. The incremental variance of SRI above and beyond ACT was a notable finding; however, because we did not include high school GPA as a predictor, this may have skewed results, as high school GPA may have accounted for some of the variance. Future research would benefit by taking these into consideration

REFERENCES

ACT (1997). *ACT assessment technical manual*. Iowa City, IA: ACT, Inc.

ACT (2004). *What works in student retention- All survey colleges*. Iowa City, IA: ACT, Inc.

Adelman, C. (1999). Answers in the toolbox: Academic intensity, attendance patterns, and bachelor's degree attainment. Retrieved June 9, 2008, from http://www.ed.gov/pubs/toolbox/title.html.

Ali, S. R., McWhirter, E. H., & Chronister, K. M. (2005). Self-efficacy and vocational outcome expectations for adolescents of lower socioeconomic status: A pilot study. *Journal of Career Assessment, 13,* 40-58.

Arbona, C. (2005). Promoting the career development and academic achievement of at-risk youth: College access programs. In S. D. Brown & R. W. Lent (Eds.), *Career development and counseling: Putting theory and research to work* (pp. 525-550). Hoboken, NJ: John Wiley & Sons, Inc.

Astin, A. W. (1993). *What matters in college?* San Francisco: Jossey-Bass Publishers.

Azen, R., & Budescu, D. V. (2003). The dominance analysis approach for comparing predictors in multiple regression. *Psychological Methods, 8*, 129-148.

Billson, J. M., & Terry, B. T. (1982). In search of the silken purse: Factors in attrition among first-generation students. *College and University, 58*, 57-75.

Blustein, D. L., Chaves, A. P., Diemer, M. A., Gallagher, L. A., Marshall, K. G., Sirin, S. et al. (2002). Voices of the forgotten half: The role of social class in the school-to-work transition. *Journal of Counseling Psychology, 49*, 311-323.

Brown, S. D., Tramayne, S., Hoxha, D., Telander, K., Fan, X., & Lent, R. W. (2008). Social cognitive predictors of college students' academic performance and persistence: A meta-analytic path analysis. *Journal of Vocational Behavior, 72,* 298-308.

Bui, K. T. (2002). First-generation college students at a four-year university: Background characteristics, reasons for pursuing higher education, and first-year experiences. *College Student Journal*, *36*, 3-11.

Chickering, A. W., & Reisser, L. (1993). *Education and identity*. San Francisco: Jossey-Bass Inc.

Choy, S. P. (2001). *Students whose parents did not go to college: Postsecondary access, persistence, and attainment*. (NCES Rep. No. 2001-126). Washington, DC: National Center for Educational Statistics.

Crites, J. O., & Savickas, M.L. (1995). *Career maturity inventory sourcebook*. Ottawa, ON: ISM Information Systems Management, Inc., Careerware.

Crites, J. O., & Savickas, M.L. (1995). Revision of the career maturity inventory. *Journal of Career Assessment, 4*, 131- 138.

Dennis, J. M., Phinney, J. S., & Chuateco, L. I. (2005). The role of motivation, parental support, and peers support in the academic success of ethnic minority first-generation college students. *Journal of College Student Development, 46,* 223-236.

Fallon, M. V. (1997). The school counselor's role in first generation students' college plans. *School Counselor*, *44*, 384-393.

Gati, I., Krausz, M., & Osipow, S. H. (1996). A taxonomy of difficulties in career decision making. *Journal of Counseling Psychology, 43*, 510-526.

Gore, P. A. (2006). Academic self-efficacy as a predictor of college outcomes: Two incremental validity studies. *Journal of Career Assessment, 14*, 92-115.

Hahs-Vaughn, D. (2004). The impact of parents' education level on college students: An analysis using the beginning postsecondary students longitudinal study 1990-92/94. *Journal of College Student Development*, *45*, 483-500.

Hertel, J. B. (2002). College student generational status: Similarities, differences, and factors in college adjustment. *The Psychological Record*, *52*, 3-18.

Hoffman, L. R., & McDaniels, C. (1991). Career development in the elementary schools: A perspective for the 1990s. *Elementary School Guidance & Counseling, 25,* 163-171.

Horn, L. (1998*). Stopouts or stayouts? Undergraduates who leave college in their first year* (NCES Rep. No. 1999-087). Washington, DC: National Center for Educational Statistics.

Horn, L., & Nunez, A. (2000). *Mapping the road to college: First-generation students' math track, planning strategies, and context of support* (NCES Rep. No. 2000-153). Washington, DC: National Center for Educational Statistics.

Hossler, D., Schmit, J., & Vesper, N. (1999). *Going to college*. Baltimore: The Johns Hopkins University Press.

Ishitani, T., & DesJardins, S. (2002). A longitudinal investigation of dropout from college in the United States. *Journal of College Student Retention: Research, Theory & Practice, 4*, 173-201.

Kleiman, T., Gati, I., Peterson, G., Sampson, J., Reardon, R., & Lenz, J. (2004). Dysfunctional thinking and difficulties in career decision-making. *Journal of Career Assessment, 12*, 312-331.

Le, H., Casillas, A., Robbins, S. B., & Langley, R. (2005). Motivational and skills, social, and self-management predictors of college outcomes: Constructing the student readiness inventory. *Educational and Psychological Measurement, 65,* 482-508.

Leal-Muniz, V., & Constantine, M. G. (2005). Predictors of the career commitment process in Mexican American college students. *Journal of Career Assessment, 13,* 204-215.

Lent, R. W., (2005). A social cognitive view of career development and counseling. In S.D. Brown & R. W. Lent (Eds.), *Career development and counseling: Putting theory and research to work* (pp. 101- 127). Hoboken, NJ: John Wiley & Sons, Inc.

Lent, R. W., & Brown, S. D. (1996). Social cognitive approach to career development: An overview. *The Career Development Quarterly, 44,*

Lent, R.W., Brown, S.D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behavior, 47,* 79-122.

Lent, R.W., Brown, S.D., & Hackett, G. (2000). Contextual supports and barriers to career choice: A social cognitive analysis. *Journal of Counseling Psychology, 47,* 36-49.

Lent, R.W., Brown, S.D., & Larkin, K.C. (1986). Self-efficacy in the prediction of academic performance and perceived career options. *Journal of Counseling Psychology, 33,* 265-269.

Macy, B. (2000). *From rusty wire fences to wrought-iron gates. How the poor succeed in getting in to—and through—college. Policy perspectives* (College Board Reports-Descriptive 141). Washington DC: College Board.

Majer, J.M. (2009). Self-efficacy and academic success among ethnically diverse first-generation community college students. *Journal of Diversity in Higher Education, 2,* 243-250.

McCarron, G. P., & Inkelas, K. K. (2006). The gap between educational aspirations and attainment for first-generation college students and the role of parental involvement. *Journal of College Student Development*, *47*, 534-549.

McDaniels, C., & Gysbers, N. C. (1992). *Counseling for career development: Theories, resources, and practice*. San Francisco: Jossey-Bass.

Metzner, B.S. (1989). Perceived quality of academic advising: The effect of freshman attrition. *American Education Research Journal, 26*, 422-442.

Naumann, W. C., Bandalos, D, & Gutkin, T. B. (2003). Identifying variables that predict college success for first-generation college students. *The Journal of College Admission, 181,* 4-9.

O'Brien, K. M., Dukstein, R. D., Jackson, S. L., Tomlinson, M. J., & Kamatuka, N. A. (1999). Broadening career horizons for students in at-risk environments. *The Career Development Quarterly, 47,* 215-229.

Olive, T. (2008). Desire for higher education in first-generation Hispanic college students enrolled in an academic support program: A phenomenological analysis. *Journal of Phenomenological Psychology, 39*, 81-110.

Pascarella, E. T., Pierson, C. T., Wolniak, G. C., & Terenzini, P. T. (2004). First-generation college students: Additional evidence on college experiences and outcomes. *The Journal of Higher Education, 75,* 249-284.

Pascarella, E. T., & Terenzini, P. T. (1991). *How college affects students: Findings and insights from twenty years of research*. San Francisco, CA: Jossey-Bass Publishers.

Rendon, L. I. (1994). Validating culturally diverse students: Toward a new model of learning and student development. *Innovative Higher Education, 19*, 33-51.

Riehl, R. J. (1994). The academic preparation, aspirations, and first-year performance of first-generation students. *College and University*, *70*, 14-19.

Robbins, S. B., Lauver, K., Le, H., Davis, D., Langley, R., & Carlstrom, A. (2004). Do psychosocial and study skill factors predict college outcomes? A meta-analysis. *Psychological Bulletin, 130,* 261-288.

Tinto, V. (1993). *Leaving college*. Chicago: University of Chicago Press.

Terenzini, P. T., Rendon, L. I., Upcraft, M. L., Millar, S.B., Allison, K. W., Gregg, P. L., et al. (1994). The transition to college: Diverse students, diverse stories. *Research in Higher Education, 35*, 57-73.

Terenzini, P. T., Springer, L., Yaeger, P. M., Pascarella, E. T., & Nora, A. (1996). First-generation college students: Characteristics, experiences, and cognitive development. *Research in Higher Education, 37,* 1-22.

Tracey, T. J. G., & Robbins, S. B. (2005). The interest-major congruence and college success relation: A longitudinal study. *Journal of Vocational Behavior, 69,* 64-89.

Turner, S., & Lapan, R. T. (2002). Career self-efficacy and perceptions of parent support in adolescent career development. *The Career Development Quarterly, 51,* 44-55.

Valadez, J. R. (1998). Applying to college: Race, class, and gender differences. *Professional School Counseling*, *1*, 14-31.

Wettersten, K. B., Guilmino, A., Herrick, C.G., Hunter, P.J., Kim, G. Y., Jagow, D….McCormick, J. (2005). Predicting educational and vocational attitudes among rural high school students. *Journal of Counseling Psychology, 52*. 658-663.

York-Anderson, D. C., & Bowman, S. L. (1991). Assessing the college knowledge of first-generation and second-generation college students. *Journal of College Student Development*, *32*, 116-122.